

Interactive comment on “How dry was the Younger Dryas? Evidence from a coupled $\delta^2\text{H}$ - $\delta^{18}\text{O}$ biomarker paleohygrometer, applied to the Lake Gemündener Maar sediments, Western Eifel, Germany” by Johannes Hepp et al.

Anonymous Referee #1

Received and published: 20 September 2018

General comments: The manuscript represents a substantial contribution to climate change, as it addresses the reconstruction of past humidity variations. So far, this climatic parameter could only be addressed based on pollen assemblages. The manuscript outlines the conceptual framework in great detail, and the results are appropriately discussed.

I have only one major concern: It is well known, that the dD of n-alkanes reflect source water isotopic composition (meteoric water in case of vegetation). The dD of rain water is related to Air Temperature, so the dD of source and related leaf water changes with

[Printer-friendly version](#)

[Discussion paper](#)



temperature. This would result in a shift of the intercept of LEL with the Meteoric Water Line towards more negative values during cold periods (Fig. 4 in the manuscript). However, the authors do not discuss the effect of this temperature dependency on the measured dD values of leaf-wax n-alkanes. At least it is not obvious from the discussion presented. In Fig. 3, it is shown that n-alkanes are depleted in D during Younger Dryas. For me, it is consistent with colder temperatures during this interval. The authors need to address this topic, outlining if, and in what manner, temperature changes will affect the reconstructed humidity values in their approach.

Specific comments: The abbreviation LEL (Page 11, line 9) should be explained earlier (LEL = local evaporation line).

Technical comments: The manuscript is pretty long. The clarity of several points may be improved by shortening of the text. This may also facilitate a wider distribution of the paper.

Interactive comment on Clim. Past Discuss., <https://doi.org/10.5194/cp-2018-114>, 2018.

Printer-friendly version

Discussion paper

